

Aviation News

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General Henry H. Arnold, Commanding General U. S. Army Air Forces—An exclusive photo taken for the 36th Anniversary of the Army Air Forces observed on August 1. See story page 10.

NEWS HIGHLIGHTS

New Plan for Vigorous Air Chamber: Industry committee proposes extensive changes in national trade association's organization.



Separate Air Force Reports Persist: High officials concede plan is being discussed seriously in government and military circles.



More and Bigger Gliders Are Ahead: Production reaches new high, with maximum output scheduled early next year.

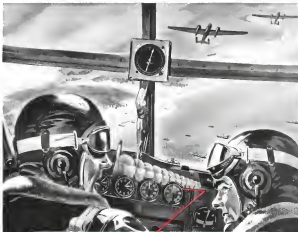
Airlines to Set Up Clearing House: Central bureau to handle inter-line financial accounts proposed by Air Transport Assn.



Precision Bombing Gains Stature: Sicilian, Italian, and European campaigns verify AAF's theories of pinpoint attacks.



United to Join Airlines Committee: Lone domestic hold-out to sign up with other companies for private foreign routes.



"THE INVISIBLE CREW" puts Superhuman Life Into Every U.S. Fighting Machine

TO ANY PILOT, his plane is alive. He calls her the "Baby Q" or the "Mary Ann." It's the same with ships, and tanks. They all have a special kind of life. And to get this superhuman "life" into more machines is a job for "The Invisible Crew."

Then, Eclipse's Scientists send the plane's masters into waiting action. Scorch's Magicians supply the spark of life. Stromberg's Circuitrymen are their "tangs." Acronyx's and Magnetyne's Systems are their unfolding

"nerves." Bendix' hydraulic "muscles" life landing gear, spin gas turbines, open bomb-bay doors. And Bendix developments in Radar provide superhuman "sight."

Many a boy will be saved by this superhuman "life" in his machine. That thought inspires Bendix engineers and the thousands of Bendix workers. The price is... sense on all of "The Invisible Crew" now fly with every U. S. plane, sail with every U. S. ship, and drive on to victory with every U. S. jeep and tank.

SOME FAMOUS MEMBERS OF

PIONEER — Flight Instruments, BENDIX' RADAR — Armament, Detection, Communication Equipment, STROMBERG — Aircraft Motion Carburators, BENDIX' MAGNETIC SYSTEMS, BENDIX' PRODUCTIONS — Hydraulic Control, Stromberg, Automatic Carburators, Landing Gear, GOWENLOCK — Aircraft's Shelters, Operational Aesthetics, KEEF — Meteorological Flight Instruments



BACK UP OUR BOYS...BUY WAR BONDS

THE AVIATION NEWS

Washington Observer

THE United States was never closer to reformation of a Separate Air Force than last week as this column was written. The subject has been alternately hot and cold for years. But this time it may "take."

It is a subject everyone in Washington talked about privately, but nobody would say anything publicly. The persistence of the subject this time is giving it strength. It won't be denied. Highly placed officers in the Army were convinced that the White House, for the first time in the many years of controversy on the subject, is leaning heavily toward creation of all our various air forces.

In the midst of these reports several significant changes were made among high air posts in the Army and the Navy. Maj. Gen. George K. Stratemeyer, Chief of Air Staff, has been succeeded by Maj. Gen. Barney M. Giles Stratemeyer, in the meantime, is given "an undisturbed



GILES

STRATEMEYER

closed assignment of extreme importance." If a Separate Air Force is created, General Arnold in all likelihood would head it. Some observers think it logical that Gen. Stratemeyer, in turn, might become head of the Army division of the Force.

Once on the Navy side, where airmen have been vainly trying to get an airmen on the decks of staff, a move was made in that direction with the designation of Vice Admiral John Sidney McCain as Deputy Chief of Naval Operations (Air) in the Office of the Chief of Naval Operations. Most Navy airmen are not as happy over prospect of a Separate Air Force as are their opposite numbers in the Army. One of the reasons stress back to organizational detail, a problem the Army is in better position to meet than is the Navy. Another is that it would be largely an Army show. The whole story will be told publicly before long.

Reports are gathering momentum that Charles E. Wilson, WPA Executive Vice-Chairman, is leaving the Board about Sept. 1. Wilson won't confirm it. Incidentally, Wilson and WPA Chairman Donald Nelson seem to be hitting their stride with WPA operating more smoothly than it has in weeks.

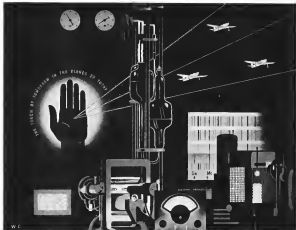
Wilson's next trip to aircraft factories around the country, to bolster what appeared for a time to be lagging production, is still up in the air. The date of departure and the places he will visit have not yet been decided. He had planned to carry his plea for production to individual plants after a check of production figures, showed some lag.

Good news from the fighting fronts means more headlines at WPA, and Donald Nelson is taking extraordinary steps to avoid complacency and overconfidence which might harm the war effort. He told his staff that "We are still a hell of a way from Berlin, and that's where we're going."

Radar, one of our most closely-guarded secrets, has gone back on the "secret list" and War and Navy Departments are refusing to pass stories or advertisements which involve Radar. Chief reason is that too much information was being given out piecemeal, manufacturers were revealing plant locations which had been restricted, and there was a rush to get on the Radar bandwagon.

The Office of War Information is preparing a report on the performance of our airplanes—the second on this subject. It should be cleared and released in a few weeks. The next report on the OWI agenda will be on the Air Service Command, an organization which has done a tremendous job with a minimum of fanfare and publicity.

Am, rail, highway and water transportation are meeting with mixed reactions the release of Senate hearings on the long-discussed proposal for the integration or coordination of all the country's transportation systems. Hearings have been held on the proposal to set up a dozen or so regional systems, each with a coordinated setup of all types of transportation involved in the area served.



Organizing Atoms for a Better Aircraft Engine

A visitor at the Ranger plant can't pretend. "Scratch a Ranger engine and you'll find a scientist!" In creating the Ranger in-line, air-cooled aircraft engine, Ranger engineers began by concentrating themselves with the very atoms of which its metal alloys are composed. They made use of scientific instruments and techniques unsifted anywhere in the world in scope and precision.

And the more advanced metallurgical and chemical laboratory facilities are today guaranteeing the quality of Ranger materials in the roads of wartime production. Spectroscopic, chemical and X-ray analysis of materials and finished parts are as much a part of Ranger production as milling machines, heat tables and grinders.

All Ranger engines are put through the

acid test of actual operating conditions in scientifically equipped test cells. Ranger's experimental test cells can simulate flying conditions at temperatures as low as -10° F. and at altitudes up to 50,000 feet. Some of Ranger's tests on auxiliary devices are not duplicated anywhere in the aircraft industry. In Ranger's "thing laboratory"—a tactical war plane fully equipped with scientific test instruments—pilots and engineers truly add new knowledge to all that has been discovered before.

While thousands of Ranger engines are turning in a remarkable record in the planes of the United Nations, Ranger engineers persist in research which will make even more reliable new tomorrow's... except in Axis newspapers.

"ON THE BEAM"

"The independence and there you go... as the 1st of past month and your efforts of national designs, engineering and research."

—Gen. Washington's Research Address

By E. S. War Bonds and Stamps

Even the most non-air-minded members of Congress are beginning to take an interest in the future of aircraft production and strike operations. Consequently it would be a good idea for manufacturers in both of these branches of aviation to keep an eye on even the most obscure congressman when he starts talking aviation. Lots of them are having aviation ideas these days—some of them based on most superficial knowledge—but one of them may come up with an idea which will strike public—and more important at the moment—political fancy.

Congress has gone home—at least collectively—but some publicly-minded legislators stay in Washington even during the shortest automobile hot weather. The reason? Because numerous striking congressional sessions on current developments can get only to the mass in town. Consequently, don't pay too much attention to congressional sessions to even during the next few weeks. A few exceptions should be made, of course.

There are persistent indications that Mexico is planning to call a meeting of CAFA—Permanent American Aerobatic Commission—in the near future to discuss aviation problems not directly connected with the war. The State Department's Tom Burke, U.S. delegate, has had no official confirmation. CAFA has been inactive since the war started.

The two or three day July 4 holiday taught WFB and Army production men here a lesson. Warnings will go out to all plants to watch their step on Labor Day. WFB was hard pressed to find a day when such production of aircraft was as low as it was on July 3.

High Washington officials are eager to point out to newsmen the masses for large stocks of completed material in warehouses along the eastern seaboard and elsewhere. They admit these stocks up until a month or so ago were in some cases huge. But they also want the public to try to realize how fast these stocks will go down as more shipping becomes available and as our troops move on into Europe. For example, a stock of aircraft engines could disappear entirely within a few months. The engine supply, in other words, does exist.

WFB is anticipating possible criticism of its program in the construction of too many war planes and too much war equipment. High WFB

officials are perfectly willing to face this criticism, however, if lives are saved by over-production.

Top WFB officials say that the aircraft industry has sufficient plant space at present to take care of need for probably the next year, but some additional construction can be expected for aircraft engines, despite the good job the manufacturers already are doing.

Little publicized, but of great import, is a WFB move to review the entire Army-Navy war production program, including airplanes and ships. WFB officials freely concede that is warping the Army and the Navy should have too much rather than not enough of any needed material, but as one official said, they shouldn't have "too much, too much." It is privately predicted in Washington that the war production program will undergo important changes in coming months.

There is now no foreseeable cessation in demand for airplanes, ships, tanks, and radar, according to high government production officials. They see no possibility of the demand for planes falling off as was the case in tanks. There is always the possibility that the enemy may turn up with a revolutionary type plane which might out-fight our best. Most top officials doubt that the enemy can pull that trick, but the possibility is always present.

In this connection special interest attaches in the nomination of Dr. George Lewis, survey trip announcement from NACA that special problems connected with high-speed aircraft will be studied. For example, tremendous problems arise as maximum speeds get beyond 450 mph, with propellers. It would not be beyond possibility that we are already approaching the 500 mph speed and must make special effort from now on to overcome attendant engineering difficulties. We will have to beat the enemy at this job.

Most top-flight engineers in Washington reflect a common trend—the glider for any purpose but those of war, with its necessary waste and expense and lack of the economy element. One authority said the other day that "so far we have seen no airplane that makes sense which would point to the glider as an important transportation aid on long flights in the foreseeable future." Most authorities expect that the powered aircraft of the future with great improvements in economy of operation, will lead the way in cargo and passenger transport.

RANGER AIRCRAFT ENGINES
Division of Fairchild Engine and Airplane Corporation - Farmingdale, Long Island

A Heavy Duty Lever Switch you can literally Kick Around

Under rough usage where more often than not switch levers are turned with the kick of a heavy boot, Mossman No. 4101 Lever Switches are showing they are built to stand terrific punishment.

Case taken in place, all the jar and vibration in the world won't shake it out of position. Control adjustment is made without the heavily constructed chassis ... a heavy brass frame, rigidly braced. On this is supported a chromium plated lands plate and spring actuated piston, in which a roller is mounted above the lever.

Nickel plated bronze springs have span-in heavy duty contacts. Their flexible arrangement, with either locking or non-locking action, has made the Mossman No. 4101 Lever Switch extremely valuable in such applications as Radio Transmitters, Signal Systems, Lighted Systems, Aircraft Electrical Controls, and Airport Lighting and Signaling.

Casted assemblies of 12 springs per pile-up, 24 springs per position, or 48 springs total, have been successfully built into the switch. Special pile-up arrangements are made for higher voltages and overvoltage ratings.

Features of the Mossman No. 4101 Lever Switch are:

1. Standard heavy duty contacts are of 3/16" diameter base over for 10 amperes, 150 volts A.C. (see technical) For extra heavy duty 3/16" lever switch contacts can be provided for 20 amperes, 150 volts A.C. (see technical) Other contact materials are available in most special orders.
2. Controls are span-in nickel plated phosphor bronze springs. Simply varying action of the heavy duty switch lever does not affect action, and positive repeat operation of best and smoothest efficiency with longer life.
3. Spring control lever includes in one design 100% flexibility without assembled lever pressure.

4. Steps in lever action deflection. Piles are loaded with positive, variable, all position combinations under-in to the highest standards.
 5. Steps in act of the lands plate to effect locking, non-locking and on-off action. Lever action can be supplied with change from two-position to three position, rise from locking to non-locking, and vice versa.
- The Mossman No. 4101 Lever Switch is one of a line of precision electric components which include many types of heavy duty multiple circuit lever switches, lever switches, push buttons, plug jacks and special switching components.

Donald P. Mossman, Inc.

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MOSSMAN
Electrical Components

AVIATION NEWS

August 2, 1943

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About AVIATION NEWS

AVIATION NEWS has with its appearance to fill the need for a timely and authoritative presentation and analysis of aviation developments. Its purpose is to serve those key executives and officials who, in order to soundly plan and develop our aviation future, must keep pace with swift moving aviation events and their significance.

As publishers of Aviation, America's oldest aeronautical magazine, we have been acutely conscious of the broader needs for information created by the continuing expansion of the aviation industry. This first issue of AVIATION NEWS marks the beginning of a complete information service to most clearly defined war and postwar requirements. AVIATION, edited by Leslie Neville, will continue to serve its over 40,000 paid subscribers in all branches of the industry—the designers, engineers and builders; the men who operate, and maintain our air supremacy. AVIATION, edited by Fowler Barker, which will make its initial appearance in September, will serve the highly specialized needs of the air carrier.

THE HIGH AMBITION OF AVIATION NEWS is to become indispensable to the men who have developed our aeronautical leadership and who are molding our aviation future. Completely, yet tersely, it tells the week's aviation news. Nothing irrelevant is included, nothing really important is omitted. AVIATION NEWS will go beyond reporting news events. It will interpret their significance, their relationship to other facts. The saving of the reader's time will always be a requirement.

Publisher of AVIATION NEWS is George W. PHEL, publisher of Aviation and Bus Transportation. Robert H. Wood, well known aviation news editor and analyst, will direct the seasoned editorial staff with headquarters in

Washington. Scott Hershey, formerly manager of the Information Department of the Aeronautical Chamber of Commerce, is Managing Editor, with Hume Stubbelfield on special assignments, Martin Michel, Transport Editor, Mary Pauline Perry covering war agencies; Schober Bangs, Pacific Coast Editor. Editors are also located in New York, Detroit and Chicago, with correspondents in other strategic centers throughout the U. S. and abroad.

THIS PUBLICATION has a swift publishing schedule. Editorial forms close Thursday of each week and the publication mails Friday.

Economies in paper usage which we have put into effect make it possible for us to render the additional services represented by AVIATION NEWS and Air Transport within our reduced paper quota as established by the WPA.

AVIATION NEWS builds upon the foundation of the twenty-two specialized McGraw-Hill publications, each a recognized authority in an essential field. Besides Aviation, these include Business Week, American Merchant, Factory Management & Maintenance, Electrical World, Bus Transportation, Electronics, and others.

It is press time for the first issue of AVIATION NEWS. We hope you like it and with each succeeding issue find this to be the invaluable service which we have as our prime objective.

James H. McGraw, Jr.

President, McGraw-Hill Publishing Company, Inc.

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BUCCANERS AND BOMBERS DIVE BOMBERS • NAVY CORSAIR FIGHTERS

Aviation News

VOLUME 1 • NUMBER 1

McGRAW-HILL PUBLISHING CO., INC.

AUGUST 2, 1943

Industry Executives Backing Plan for Vigorous Air Chamber

Rejuvenation of National Trade Association expected to become effective in near future. Need urgent in face of numerous industry problems.

The aircraft manufacturing industry which last spring set upon its own trade association—the Aeronautical Chamber of Commerce—and rendered it almost impotent and mute—is now going to revitalize the organization and some aviation executives say not a minute too soon.

Backers of the plan hold that the need for a strong, alert, vigorous national trade association for the industry is obvious. They contend that it is particularly so at a time when the industry is beset by multitudinous problems, the solution of which will determine the industry's future and destiny.

Key Men on Committee—The committee, named by the Board of Governors to work out a plan for a revitalizing transaction, met in New York July 27, to hold its second discussion of the situation. The committee members, J. Carlton Ward, Jr., president, Fairchild Aircraft Division, J. Stacy Smith, vice-president and secretary, Jacobs Engine Co., R. H. Doolittle, assistant to the president of Aviation Corp., Charles Moore, vice-president of Engineering, Bendix Aviation Corp., Harry W. Calk, Washington representative of Northrop Aircraft, Inc., and James P. Murray, Boeing vice-president and customer representative, and President of the Chamber, ex-officio, are agreed on a general plan, and only details remain to be worked out.

Members—The committee is on a still hunt for at least two key men to handle the proposed expanded Chamber program. It is seeking an aggressive administrator with a knowledge of the industry and the workings of Washington byways and an equally well-qualified man to set up and direct a public relations department.

Organization Set-up—Current plans call for a member of the industry

as President of the Chamber and with an executive head to actually direct the Chamber's affairs. The public relations department was scheduled in the reorganization of last spring with a special administration in the program that the Chamber not engage in advertising or publicity activities. This was at a time when most other trade associations were expanding their advertising and public relations programs.

Also abolished last spring was the so-called Special Projects Department which handled, among other things, labor relations. This was at a time when it was obvious that manpower would become the industry's biggest headache.

Need for Chamber Widepread—Just as the first moves in last spring's reorganization came from the West Coast, so too was that seen the origin of moves for a revitalization program. However, there were Chamber members in all parts of the country who were always convinced of the necessity of having a strong trade organization.

The moves which culminated in the appointment of the committee now working on the new program started about two months ago. The revitalization plan is not an overnight idea, and the innovator is anxious to get it into effect as soon as possible.

The two principal obstacles to immediate action are finding the proper personnel to carry out the new program and to arrange for the increased financing which the program will necessitate.

On Reorganized Basis Now—The Chamber at present is operating on a contracted basis, with a budget only one-fourth of that of the previous year, and consequently a step enlargement of the program will necessitate a change in the assessment set-up. This would involve

some difficulty since the Chamber's fiscal year does not end until October 31. Members of the committee, however, want the new program effective long before that. It is likely to be considered by the Board of Governors some time this month. Money, it is reported, is no object.

Postwar Goals Refused—Included in the revitalization program is a plan to strengthen and enlarge the Chamber's Economic Development Department which is engaged in postwar planning. Chamber mem-



Indignia Troubles Decision to return surplus on all U.S. airplanes to improve surplus brought back, Navy without money with all the advertiser publicity. Many pictures like that at top give impression only Army planes are affected. Photo people wanted that all their plane get become obsolete. More units came from Army and Navy camouflage officers who are under constant orders to make planes hard to see. Navy is compromising with the latter groups by making the emblem gray instead of white on top of the wings. Bombs that about New York tried to impose old emblem with a white outer circle before the official revision.

bers, eager to get official government views on the postwar picture, received a rebuff from their speakers at a recent Pentagon luncheon. Under-Secretary of War Patterson and Under-Secretary of Navy Foran told The Under-Secretaries not only declined to discuss postwar aviation prospects, but indicated that their lifelines should center

their thinking and activities to war production.

This accident, plus the potent Truman report which was pretty rough on some aircraft manufacturers, pointed up further the necessity for a unified, vocal organization which can take an effective part in important decisions and plans now being made for the industry.

Army Air Forces Observe 36th Birthday Anniversary

Started Aug. 1, 1907; first "military" flying machine acquired Aug. 2, 1909. Officer and two enlisted men were nucleus.

Just 36 years ago—Aug. 1, 1907—the Aeronautics Division, Office of Chief Signal Officer, U.S. Army, was officially set up for the study of aircraft.

And it is that act the mighty "round-the-world Army Air Forces of today had its beginning. One captain and two enlisted men were assigned to the division at that time. Today nearly 1,000,000 men—expertly trained pilots, bombardiers, radio operators, navigators, and technicians—comprise the most powerful air force the world has ever seen.

Heading that vast Air Force is Gen. H. H. (Hap) Arnold, one of the Army's first three military pilots and the AAF's first four-star general. As a second lieutenant, General Arnold learned to fly when it was an historic event for an airplane to push a mile into the sky.

► **"Wright Flyer"** Accepted—Just two years almost to the day after the Aeronautics Division was set up—on Aug. 2, 1909, the United States Army acquired its first military airplane from the Wright Brothers. On that day, at Fort Myer, Va., just across the Potomac from Washington, an Aeronautical Board which had been appointed to examine the "Wright Flyer" decided to purchase the fantastic flying machine after it had been put through certain tests, including its ability to fly over than an hour carrying pilot and passenger. Today, this airplane is hidden in a secret storage place for the department, removed from public exhibition at Smithsonian Institution.

While Aug. 1 is the birthday of the Army Air Force, it was originally only an unimportant sub-division of the Signal Corps, highly

interesting to a few, but skeptically regarded by most. It was far removed from the powerful AAF with a status of equal importance with other combined combat arms of the Army.

► **Risked Their Neck**—Isolated of thousands of warplanes in every category which have established aerial supremacy on every battlefield, it was then only one flimsy "aeroplane" and a handful of courageous men with vision who were willing to risk their necks by taking the contraption into the air.

The "Army Air Force" of Aug. 2, 1909, was a biplane with a wing spread of 36 feet, 4 inches, and a wing area of 406 square feet. The engine weighed 540 pounds. Two high-gusher-type propellers mounted in the rear were driven by chains from a single gasoline motor. The landing gear consisted of two runners or skis, and the flying machine was hoisted from a crane, as well, by means of a 1,000 pound weight dropped from a tower in the rear.

► **Arnold Was Pioneer**—Among the pioneers was young Hap Arnold, now Commanding General of the Army Air Force. He never lost faith during those trying years, and it is to General Arnold and other men like him that the nation owes its gratitude for an Air Force which is daily striking terror into the hearts of the enemy around the world.

During those trying days there was another group of aviation pioneers who must remain in the memory of this 36th birthday of the Army Air Force—the aircraft manufacturers who, cooperating with the Army kept on building those contraptions against a background of jeers and outside from men of lesser vision.

The AAF celebrated its birthday by blasting the enemy from the skies over every battlefield of this global war.

Wheeler Protests

Senator Wheeler, Democrat of Montana, has joined advocates of seaplane and surface transport. In a recent interview, the chairman of the Senate Interstate Commerce Committee declared it is "completely wrong" for railroads and inter-ocean steamship operators to attempt to participate in postwar aviation development.

He expressed the view that railroads should be taken out of the bus and truck business should not enter water transportation operations, and should not own air facilities.

Airport Projects Held Unnecessary

WPB won't permit resumption of construction.

Manpower and equipment are vital in the building of airports in materials, according to WPB officials, who do not envision resuming many of the CAA airport projects they stopped last January.

In January, 42 CAA airport projects were cancelled by WPB. Seven of these projects had been withdrawn from the program by CAA and the sum of \$58,020,320 had been appropriated for the construction of the remaining 35 projects.

WPB reinstated new projects at the request of the Army or Navy totaling a sum of \$5,035,048, leaving 38 of CAA's projects canceled.

However, CAA again reviewed that program and decided that 12 of the 38 airports were unnecessary to the war effort, so if WPB officials decide to reinstate CAA's proposed airport projects only 14 locations will be affected. Expense for the program, a down payment on the program amounted to \$6,323,000.

CMP Working Well

Both industry and WPB report further improvement ahead.

CMP—the much-discussed Controlled Materials Plan—which was viewed with some skepticism by industry when first announced, and which was the target of considerable criticism, appears to be operating beyond expectations.

That doesn't mean that there aren't still some "bugs" that have to be eliminated, but both members of industry and War Production Board officials concede that it is operating well, all things considered, with improvement on the way.

► **Fewer Kicks**—A WPB official said that there had been fewer complaints in the last three months about inability to obtain materials than in any previous corresponding period.

On both the government and industry sides of the fence is a hope that the program will be left alone and given an opportunity.

Beech on Exchange

Beech Aircraft Corp. (BAC) is now listed on the New York Stock Exchange tape. Its first sale was at 14 points.



"Woodworth Carrier." The U.S.S. Charger, types of scores of aircraft carriers being turned out for the Navy in mass production scale. When at keel was laid it was intended to be a merchantman.

U. S. Carrier Fleet Multiplies; Already Outstrips Britain's

Navy's complement estimated at 90, and growing monthly at second pace; many are conversions from merchant vessels.

The U. S. is building up a force of battleship carriers at a monthly rate which would have been unbelievable a year ago. Our carrier strength already exceeds that of Britain.

The Navy admits that "dozens" of auxiliary or escort carriers are going to sea against enemy subs, for vital patrol work with convoys, and to ferry short-range aircraft from the U. S. to foreign parts. We probably have 30 carriers already at sea. Two years ago we had seven carriers, eleven were building, and the program was far in the air. We have lost only four so far in this war, according to official announcements.

► **Carriers "Doomed"**—Marianne Auchterline tells Glenn L. Martin, vice chairman, that less than half the long-winded future planes can hit any spot on earth from home base. The farthest point from any point in the world is only 12,000 miles. We have designs in the works now that can make it. However, the carriers are our only available answer to today's problems.

An escort carrier is slower, smaller, and less armored than a fleet carrier. Escorts originated in 1941 when the Navy directed the Maritime Commission to convert one of its 12,000-ton C-3 merchant designs to a ship. Most merchant ships are converted C-ships or produced by the Kaiser yards as carriers, as designed from the keel up.

► **Enemy Always Reachable**—Auxiliary carriers carry forces of aircraft large enough to patrol large areas surrounding convoys. Equipped with catapults, they transport land-based combat planes to combat ranges. ► **Escort Carriers—These "Woodworth" carriers, as they are called, are equipped with flight decks, hangar decks, and machine shops, like fleet carriers. They have elevators, and can give complete coverage to their brood planes. They carry the Oceanic Avengers and Wildcats, Vought Corsair F4F, and presumably Douglas Dauntless A-24s, plus deliveries to the front of any kind of planes that can take off from their decks, including fighters.**

► **Second at Arms**—An auxiliary carrier did a beautiful patrol job at the request of the Alaskan island Alut. When few overseas convoys provided the nearest land-based air support from coming into the fight, the little carrier lurked in the fog and did the job, sending out quick warnings when weather threatened to hide the ship entirely.

Some time ago naval authorities discussed the question of building fleet carriers smaller, so as not to have so many birds in one nest. It was agreed that, though the big carrier is more vulnerable, its greater defensive and striking power more than offsets that disadvantage. Jap carriers are about half the size of ours, carrying around 40 planes.



AAF on the Wing Here is the prototype of the first "military" aircraft acquired by the U.S. Army on August 2, 1909. The plane is Fort Myer, Va. The pilot is Orville Wright.

NACA Expert to Push Study of Aircraft Design Problems

Dr. George Lewis assigned task of visiting plants; concern rising over slow progress of new planes.

Concern over the solution of design problems involved in new types of aircraft is indicated in the decision of the National Advisory Committee for Aeronautics to have Dr. George Lewis, its Director of Aeronautical Research, make an immediate survey.

He will report present status of aeronautical research and development and recommend the steps necessary to accelerate the solution of some design problems.

New Lab. Working 3 Shifts.—Dr. Lewis started his series of conferences July 27 in Seattle. He will confer with designers and engineers in various aircraft plants and will also visit the contractor's new Ames Aeronautical Laboratory at Moffett Field, Calif. The 500 men and women of this laboratory are now working three shifts.

New Types Lacking.—It has been pointed out that the United States has been at war for more than a year and a half and has yet to introduce in combat a really new type

plane. There have been improvements of previous designs, true, but not an all-new plane, although there are several on the way—some very close to combat, others not nearly so far along.

New Fighters and Bombers.—New fighters are on the way whose firepower and fighting abilities are successfully terrifying New bombers, too set in the office and our military men say they feel fairly confident that the enemy is not ahead of us in any phase of aeronautical development.

It is not that we can't beat the enemy with the planes we have, because we can, but at the same time it would shorten the agony of war if we had some new ones and it should not be overlooked that almost every proven airplane is from before we won our war.

Ultimate Attack on Japan.—Attention is naturally being given to long-range planes for the inevitable and ultimate attack on Japan, when we are ready for it.

Still, the fact that the NACA deems it necessary to make "an immediate survey" is significant.

Husener Ques Tomorrow.—At the same time, Dr. Jerome C. Husener, NACA Chairman, explained that "there is splendid collaboration between aircraft manufacturers and the three research laboratories of the NACA." He added that "you in large measure are responsible for America's development of aircraft of superior performance to those of the enemy."

"But," said Dr. Husener, "there are difficult problems growing out of the recent spate of airplane speeds beyond 400 miles per hour which must be solved as quickly as possible."

Gen. Hines Becomes Chief of Air Staff

Successor Gen. Starnesberger is second in command, AAF.

Maj. Gen. Barney M. Giles, formerly Assistant Chief of Air Staff for Operations, Commitments and Requirements, has been named Chief of Air Staff, AAF, succeeding Maj. Gen. George S. Starnesberger.

Gen. Starnesberger, Air Staff Chief since June, 1942, has been given "an undischarged assignment of extreme importance" by the War Department announced.

Next to Gen. Arnold.—Gen. Giles now becomes second in command of the Army Air Force to Gen. H. H. Arnold. It is significant that his background and experience lie chiefly in positions concerned with material and maintenance and posts as engineering officer.

He is not a West Point graduate, having entered the regular Army in 1928 after serving overseas as a flying officer in the last war. His training assignments in this country have included bombardment groups and heavy bombers to which the AAF have been converting much of the nation's plane production.

More Top Air Staff Changes.—Additional changes on the top air staff include the appointment of Brig. Gen. John S. Penne as Deputy Chief of Air Staff, replacing Maj. Gen. Thomas J. Hensley, Jr., who has become Commanding General of the Southern Air Force Training Center at Maxwell Field, Ala.

Gen. Penne, who was in Cairo in 1941 as Military Air Observer in the Middle East, will serve with Brig. Gen. Lawrence G. Saunders and William E. Hall, as Deputy Chiefs of Air Staff under General Giles.

Contents Law Bars Rail-Air Combine

Assert Starnes and Civil Aeronautics Act do not permit granting applications.

A. C. Wigram, Chief of the Transportation Section of the Anti-Trust Division, Justice Department, and Tom C. Clarke, Chief of the Division, will intervene in bills and railroad petitions to CAA for air and helicopter routes because they assert the law does not permit granting such applications.

To Show Violations.—Hearings will start in August and Justice will attempt to show that the petitioners are not following the Sherman Act or the Civil Aeronautics Act of 1938 into which much of the anti-trust act was written. No surface carrier can own or operate an airline except as auxiliary or supplemental service, it is said.

Justice feels that an established surface carrier should operate an airline only to protect its revenues, not to develop an airline, and that a special monopoly and subsidy laws as the Sherman Act.

Hoe Output Up

The War Production Board has disclosed that the R. Hoe Co. of New York City has more than \$11,000,000 in contracts for "heavily loaded" plane parts, engines and Navy gun mounts, and has reached a capacity rate of \$1,000,000 a month. The firm was working on a \$12,000,000 contract last November to make 30-arm recoil mechanisms at the rate of 300 a month, when the cut-back order reduced the number to 348 a few months ago.

Equadorian Here

Gen. Ricardo Aguila, commander in chief of the Ecuadorian army and air force, has taken residence in Washington as head of Ecuador's military missions. He will be a member of the Inter-American Defense Board. General Aguila arrived by plane from Mexico.

Manufacturers Discuss Forming 'Personal Aircraft' Association

Rotary vs. fixed-wing differences in forefront at Chicago meeting; Aero Chamber affiliation urged.

The proposal by Dwight L. Wallace, president of Cessna Aircraft, for organization of an "Association of Personal Aircraft Manufacturers," has met with a generally good reception from the major airplane and helicopter manufacturers to which he sent letters of inquiry.

The preliminary meeting July 22 in Chicago was expected to discuss just how well these parties comprehend each other's ideas on a mutual benefit project. Differences between manufacturers of fixed wing and rotary wing craft are bound to be present.

Murray Proposes.—James P. Murray, Acting vice-president and president of the Aeronautical Chamber of Commerce, after hearing of Wallace's proposal, wrote Wallace and suggested that the plan for such an organization be within the Chamber structure. Murray further suggested that Wallace, as a Chamber member, had not only the right but the obligation to propose any changes in the Chamber set-up which would better serve the interests of the personal plane manufacturers.

Wallace Replies.—Wallace in his reply cited, among other things, the



GUNNERY TRAINER:

Seen to go into full-scale production is this sleek advance gunnery crew trainer, called the Gunner, by Fairchild. It is made predominantly of wood—Duralumin—a Fairchild developed process. The fuselage and wings covering and all fixed tail surfaces are of Duralumin. The Gunner is powered by two Ranger 18-hp, 12 cylinder air-cooled engines, each with a take-off of 225 hp and a cruising rating of 450 hp. It has a wing span of 52 feet, gross weight of 11,265 pounds, and is 27 feet, 7 1/2 inches in length.

Cessna Aircraft, War Production Council, told the public in a statement.

Ward is also president of Fairchild Engine & Airplane Corp., and in recent years won an American aviation museum at Fresno and Great Britain.

Equipped for Global Warfare.—Asserting that "the Allied Nations are equipped for global aerial warfare to a degree unknown to our enemies," he described the Flying Fortress as "our most potent offensive weapon in the war," but pointed out that it is the Warhawk, the Avenger, the Lightning, the Mustang, the Hellcat, the Corsair, the Thunderbolt and others, were newer developments.

"Had it not been that for two years our Allies bought equipment in this country and allowed us to perfect our weapons," Ward stated, "we would have been found with most of these weapons absent when Pearl Harbor crashed down on us." He stressed the necessity that the government, after the war, do its best to keep aircraft companies in healthy condition.

Combat Tests Needed.—"What the Government should do is continue to have design competitions and continue to procure operating qualities of the planes selected in the competitions," the Council head asserted. "I don't mean it should procure enough of the planes for a war-basis war force, but it should get enough to subject them to the tactical exercises which will test their quality under battle conditions and

Ward Says Our Planes Are Prewar Models

Stresses that government should keep aircraft industry alive after armistice.

Aerial warfare has made it clear that the current industry must devote itself to "an ever-increasing effort in development," J. Carlton Ward, Jr., president of the East



NEW CARGO LOADER:

Minuties saved on the field add miles to the sky with this application of a power industrial truck to the loading of a C-47 Douglas Skymaster. The Electro-Parier Electro Co., Cleveland, devised this modern method which requires only two men to raise or lower a half-ton of freight.

Another great contribution
to the conquest of the air

radar

and the electronic vacuum tube have scored a victory in man's conquest of the air. No longer need the pilot grope his way, no longer need fog and storm present so great a hazard to man's flight. Radar is an electronic device which by maintaining a rebounding beam enables one to visually see through the darkness, storms and fog. Mid-air collisions, crashes into mountainsides, and other obstacles which may be in the path can be discerned miles ahead. Radar is probably the most important contribution to man's conquest of the air since the Wright brothers took off at Kitty Hawk. Vacuum tubes are the heart and soul of this equipment.

The usefulness of the airplane has been greatly advanced by the electronic vacuum tube. And Eimac tubes in particular have played an important role. First in surface ground stations, first in instrument landing devices and today first in military radar. Yes, Eimac tubes and Aviation are old friends. One of this friendship comes a combined experience of great value to future progress.

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THE AIR WAR

COMMENTARY

High Level Precision Bombing Wins New Laurels in Air Action

American planes being equipped with devices which permit bombardier to control flight over target areas.

Missile air-to-air bombing, popularly termed pig bombing, has captured the imagination of the public, and as a matter of fact is a highly effective technique. Proved once and for all in the battle of the Bismarck Sea, it has been successfully used in the Mediterranean, and also adapted for land operations. It is here to stay and will see further development.

■ **Stick in the Arm**—However, high altitude precision bombing, an American air power fundamental, has had a shot in the arm during recent weeks that appears likely to greatly increase its value as a war-winning technique. A year ago the Army Air Forces were on the defensive everywhere. There were nowhere near enough Fortresses or Liberators to go around, nor trained crews to operate them. Missing the targets at the bombardier school and in the operational training bases was one thing, but hitting the real thing in theaters, with the alien fall of enemy fighters and flak, was a different story.

The problem was to keep the bomber steady enough so that the bombs could be dropped right on the target, and reduce the run so that the airplanes could start evasive action at the first possible moment, return to base and live to bomb another day.

■ **Copied Over Target**—Naturally details are secret, but the main idea is that certain equipment is being added to American heavy bombers in all theaters whereby the bombardier himself is able to control the flight of the plane over the target area. Hereafter he has had to concentrate with the pilot. That takes care of the steadiness.

Other techniques have been developed whereby the bombardier is able to pre-set the bombight to conform to conditions to be encountered over the target, with only a dial adjustment or two to make a

psychological moment. This reduces the normal bombing run to about 30 seconds. It takes half a minute for the fastest anti-aircraft outfit, using radar equipment, to get a shell to explode on a bomber 20,000 feet in the air. In the previous few seconds differential, after the bombs are dropped sharp evasive action can be initiated.

■ **Irony Hit**—In the process of installing crews in this new technique, a hedge in Burma which the boys of the 10th Air Force in India had been trying to get for months was hit smack on the nose on the first run with the new equipment.

It has been a big factor in the increased effectiveness of the American strike on occupied Europe. A few days ago announcement was made that Brig. Gen. Frederick L. Anderson was appointed chief of the 8th Air Force Bomber Command (recently renamed Strategic Air Force)

General Anderson last year was Director of Bombardment on the Air Staff, having previously organized the first United States bombardier instruction school. He is reported as highly enthusiastic about this new aid to precision bombing.

■ **Pin-Point Bombing** Pays Off—Precision bombing is paying off heavily in various other theaters. The accuracy in Tunis and Sicily was little short of amazing. Pundits, Rome, Rabat, Casablanca—around the world pin-point bombing is changing the course of the war.

■ **AIR WAR REVIEW**—Percent of coming events was the attack by Army Liberators on Panzerashiki, northern base of the Japanese archipelago, the outfit of the Navy's lone ground.

There was another level of pain from the attack when Flying Fortresses of our 5th Air Force flew more than 1,300 miles to blast Norway—targets being the important Axis sub base at Trondheim and metal works near Oslo. Surprised in broad daylight, the Nordic anti-aircraft fire was light; 13 Norwegian interceptors were shot down. One of our planes failed to return.

RAF and Greek bombers withered among installations and troops on Crete in another daylight surprise attack to add to Axis confusion. Seven of our ships are missing in this, the largest raid yet on that target. Bombing was limited again.

In the combined Pacific theater distances embraced by MacArthur's



Unpublished Transport Starting race of one of the Naval Air Transport Service's Consolidated "Conquads" four-engined flying boats, probably the last published transport in operation.



Airline Patrol Navy Grumman "A-100" torpedo planes and a speedy sub-chaser are shown in training off Florida for post action against Nazi submarines

offensives are breath-taking. From Sorobaya, Java, blasted by Liberators while the overcasted Nips basked in brilliant lights, to Guadalcanal in the Solomons in 3,000 miles. All through the strip our air forces struck during the week, strafing Makassar on Celebes Island, three bases on Timor, and ranging the New Guinea coast, New Britain, and the Solomons.

♦ **The unsanctioned fight of Battleship X** against a swarm of Jap dive bombers several months ago in the Pacific fighting zone made a profound impression on those Washington editorialists who are responsible for battleship sentiment. The test ship was loaded with temporary installations of anti-aircraft guns and knocked down all of the Japs before they reached their target. Result may be that some heavy guns will be removed from battleship decks completely and replaced by hundreds of small anti-aircraft missiles. Such ships would be important defenses for accompanying aircraft carriers, while the carriers could furnish protection for the escort in case an enemy heavy cruiser or capital ship approached.

♦ **New Liberator reinforcements** are flying in Chennault's 14th (China) air force in increasing numbers. When all airports are deemed available for the big ships you can expect the headlines the Japs dread. The rate of Liberator is also rising in the South Pacific areas.

♦ **Map Gen. Chennault's** Headquarters in China report the Japanese pilot supply continues to decrease. In addition, Zeroes recently shot



eliminated. The RAF's practice, begun during the height of the sub menace, of placing "Suicide Harriers" aboard merchant ships has been discontinued, now that so many escort carriers are available. Pilots took off by catapult if a sub was spotted at sea. Only hope for the pilot after the plane was to crash into the sea near his ship and be rescued.



High Altitude Plus Precision: Hundreds of Boeing Flying Fortresses like this B-17F, together with Consolidated Liberators, are making the critics of high altitude precision bombing eat their words.

down apparently have been out of the factory only a few weeks.

♦ **They're using P-38 Lightnings** for about everything in this war, including the fighting purpose for which they were originally built. Latest use is for photographic reconnaissance over Sicily. Col. Elliott Roosevelt says the P-38 pilots furnished nearly 80 percent of the intelligence of movements in Sicily. First microphotographs of railroad lines are made 48 minutes after the pilot lands.

♦ **Armed Secretary of War** Patterson declared that Allied air superiority over Sicily was as high as test planes to one—the results of which are obvious.

♦ **Troop Carrier Command** pilots in New Guinea have announced record totals of combat flying hours and missions, with 1,000 hours of combat not unusual.

NARRATOR

AIRCRAFT PRODUCTION

Aircraft Output Shows Upturn, But Not At Levels Scheduled

Gain is gradual, with over-all seven months' picture considerably below expectations of Washington officials.

Output of aircraft, which had settled on a disappointing production plateau for two months or more, began to show a gradual upturn the latter part of July which will lift July production above previous discouraging estimates.

While June production in units was barely over May's announced 7,000 plus, the middle-of-July estimates brought frank concern to War Production Board officials, the Army, the Navy, and the industry. After raising along behind June production, the July output—shortly after mid-month—caught up with June output for the same period, and will exceed the June figure. That took some of the barbs out of worried brows, but not all of them, because the over-all picture for the first seven months of the year was not up to expectations.

♦ **July under 8,000**—Before the disappointing June figures were accepted, it was the general hope that July production would begin approaching 8,000, but the actual production will not be close to this figure. The production slump perplexed WPB and aircraft builders as well.

♦ **Aluminum**—which long had been one of the toughest problems—was definitely licked. There was no lack of materials—a problem not entirely solved but pretty well in hand—and there was delight about even in distribution. And while manpower is beginning to be a serious problem, it was not a major item during the slump period, and even the shortage here, in most cases, was deep.

♦ **Holiday Slump**—Part of the falling off for July was due, of course, to the Fourth of July week-end, which cut deeply into schedules. The output for July 5 was one of the lowest daily productions in weeks.

♦ **Men responsible for production** looked for an answer. The lag was ascribed variously to the summer dog-days, manpower shortage, the coal strike with resulting bad psychology, cutbacks in some areas, and a wave of optimism.

Some observers in Washington were of the opinion that President Roosevelt made an unfortunate selection of words when he referred to the Sicilian invasion as the beginning of the end. The general good news from the fighting fronts undoubtedly added to the lag.

♦ **60% of Quota Due by End '63**—Local Gen. Hrehon Sorenson told 1,500 war plant executives in Chicago that to meet assigned 1943 quotas the aircraft industry would have to build during the last half of the year 61 percent of the planes



Willy Mitchell Barbers: Here's another B-26 rolling out the doors from the assembly line of the North American Aviation plant at Inglewood, Calif. Enter ships on the flight ramp are undergoing final check-ups, painting, and flight tests. In addition to Mitchell, this plant produces the P-51 Mustang fighter plane.

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White-Rodgers automatic temperature control equipment provides pilots for greater concentration on fighting power by providing completely automatic control of—

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Upon request, engineering data will be furnished to manufacturers requiring controls for the above or other temperature control applications.

WHITE-RODGERS ELECTRIC CO

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ILLUSTRATION COURTESY OF M. H. HARRIS



Aircobers Are on the Way! That's bad news for the Axis, which more than ever has wished that the constantly good production of Bell Aircraft would fall off. This picture at Bell shows why more and more Aircobers are reaching fighting fronts all over the world.

scheduled for 1943. At the same meeting, C. E. Wilson, WFB vice-chairman and chairman of the Aircraft Production Board, predicted a long and stubbornly fought war and warned that the enemy's strength should not be underestimated. If the combined efforts of production checks has its effect, the in-

dustry still may come fairly close to meeting the working or "realistic" schedule, now in its fifth revision, and by the end of the year production should be 3,000 planes a month. Peak production, variously forecast to be reached from January to March of next year, probably will not be reached until mid-1944.

Gull Wing Explained

Reason for design explained by Vought engineers

The inverted gull wing design of the Vought Corsair has always posed the curiosity of laymen and stimulated discussion among aeronautical engineers. There is, of course, as there is for everything in airplane design, a reason, or reasons. One of these reasons, the manufacturer announces, has to do with the propeller on this highly effective Navy fighter. The Corsair is built around the 2,000-hp. Pratt and Whitney engine, which required a propeller with a diameter of more than 11 feet.

Needed Deck Clearance—"The engineers at United Aircraft's Chance Vought Division envisioned their bows over the long, heavy landing gear which would be necessary. It would be difficult to retract

into the wing. This orthodox gear, they figured, would be necessary to enable a propeller of such size to swing clear of the deck.

They came up with the inverted gull wing with a light gear that fits into the apex of the V angle. This, they told early designers, would save weight and provide clearance for the propeller. And, they pointed out, the design permits the wing to stem from the fuselage at a perfect right angle—a position, they held, that was most efficient aerodynamically speaking.

Douglas Plant Opening

World's largest cargo plane plant opens at Chicago, July 31.

Set for July 31, in Chicago, Douglas debuts its new plant and will fly for the first time, the first C-54 Stinson built at this plant, which will build cargo planes exclusively.

Constructed of wood to save critical materials, and solely designed and tooling for the assembly, at first, of C-54 Stinsons, the Chicago plant is scheduled to produce great numbers of these four-engine air taxis for high-speed transportation of vital arms and supplies to battlefronts.

The big structure will have its own airfield, with four main runways. Cost of the layout was \$33,000,000. Officers at the plant are John D. Weaver, plant manager, John C. Backus, assistant manager, and James S. Farra, administrative executive.

Hundreds Join Cessna Post War Plane Plan

Priority delivery system for family air (see also customers).

Nearly a thousand persons already are arranging for delivery after the war of their own personal airplanes through the unique priority delivery plan, published and advertised by Cessna Aircraft Co. of Wichita, Kan.

\$1750.000 "Seawashed"—These people, according to Cessna President Dwane L. Wallace, have "seawashed" more than three-quarters of a million dollars in War Bonds under Cessna's plan.

The program is simple enough. It works like this: Cessna assigns a temporary priority number to anyone listing with them the serial number of an article as a War Bond. A permanent number is assigned when the listing of serial numbers and denominations of War Bonds reaches \$500. The average initial restriction thus far has been \$400.

Cessna, like other aircraft manufacturers, is now engaged entirely in military production, turning out two-engine Robart bomber-pilot training planes and personnel transport planes for the Army Air Force. "I say, fly and live!" Looking to the future, Cessna first announced a post-victory "Family Car of the Air" more than a year ago, emphasizing in their advertising that the plane was one that the average person, without any previous experience in flying, will be able to buy, fly, and use.

The success of the campaign, for which Cessna received a citation from Secretary of War Henry Morgenthau, is obvious in the more than three quarters of a million dollars in War Bonds earmarked for the purchase of personal planes.

Stout Designs Peacetime Air Cars

Studies postwar possibilities for Aviation Corporation's giant system of aircraft production plants.

The giant Aviation Corp., making searing studies of postwar outlets for its widespread aircraft and accessories plants in the midst of war production, recently set up a Stout Research Division of Consolidated Vultee, headed by William B. Stout, aviation planner and inventor. Stout is working on three family airplanes for postwar production.

► **Models Peacetime Flying Cars**—The Aerocar is a "flying automobile"—more car than plane, designed for family tours and trips. A second design is a variable airplane, more plane than car, for distance flights and short runs on the ground. Third is the Retech (Helicopter), for commuters.

Special interest is attached by the industry to designing Bill Stout has a hand in, because in the past 30 years he started the first passenger flight service in the country, designed the first all-metal commercial and transport planes, participated in development of the famous old Ford tri-motor, and has a lot of space in the aeronautical Who's Who.

► **Easy riding at 70 mph**—Stout proposes a three-passenger flying car with four wheels and folding wings for light duty. Weight about 1,300 lb., with a standard 66-inch track, speed 80 to 70 mph on the road with standard automobile tires.

The roadable plane, also having four wheels, will weigh only 800 lb.,

have a 30-ft. wingspan, a range of 400 mi., and enough strength for light delivery service.

► **Lines Road in Emergency**—Stout places much emphasis on land compartments of new materials and structures. These airplanes, he says, can wait at ports for storms to pass, or keep going along the road.

From two to five persons can be accommodated in the Retech, which will have a rounded transparent plastic nose. It will be about 25 ft. long, 6 ft. wide and 8 ft. high, with a 33-ft. roller. The fuselage is of light steel and dural, sheathed with a new plastic. With a conventional 125 hp. engine, two passengers and baggage, it will weigh 1,700 lb.

Stout is working on a simplified method of changing the blade angle. He believes that electronic devices can be used to avoid collisions and that almost anybody who can drive an automobile can operate a Retech.

T. P. Wright Forecasts Plane Peak in 1944

ARCO chief says change orders are being held down

Coordination between the Army and Navy and civilian plane producers, coupled with increasing standardization of aircraft types, suggests a smooth production flow

from the present time forward, says T. P. Wright, director of the Aircraft Resources Control Office.

Wright says ARCO, defense agency for the Army and Navy programs, has effected such coordination. Engineering changes are being held to a minimum, and then are made only at Army or Navy request.

► **Emphasis on P-51, C-46**—Special emphasis now is being placed on North American's P-51 Mustang, for fighters; the Curtiss-Wright C-46, for cargo; and the Douglas C-54, another cargo ship coming off the line at a new Chicago plant scheduled to open July 31.

While the industry will not meet its "theoretical" schedule of 12,000 planes next December, the working schedule, now in its fifth revision, will be met. New W-3 schedules are being received by manufacturers. Wright estimates that peak production will be reached in mid-1944, instead of in December.

► **Manpower Main Headache**—Manpower remains the toughest item for meeting schedules. The director pointed out that the program has so advanced that problems as long as aluminum, but rather constant of constant small "bottlenecks" that are daily.

As defense agency, ARCO goes to the War Production Board Requirements Committee for materials for the Army-Navy war program. After allotment is ARCO by WPB, the supply is allocated to manufacturers by the Aircraft Scheduling Unit. Producers obtain delivery through the WPB's Controlled Materials Plan.

NEW G-E RADIO-NOISE FILTERS for Aircraft



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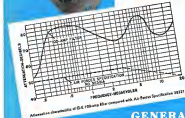
They provide excellent noise suppression—especially from 200 to 20,000 kc

THESE filters help immeasurably in providing the high-fidelity radio reception so important in aerial warfare. They attenuate radio-noise voltage on aircraft electric systems (on circuits with such equipment as generators, amplifiers, inverters, and dynamotors). They are particularly helpful in systems where open wiring is used to save weight.

FEATURES

- High efficiency characteristics results in excellent noise reduction.
- Compact and lightweight (for 100-amp rating, shown at left, approx 2 1/8 in. measuring approx 5 1/4 by 3 1/2 in.)
- Can be mounted readily in any position
- Operate efficiently over a wide temperature range (—30 C to 50 C)
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FOR FURTHER DATA Ask your G-E representative for Bulletin GEA-409, or write to General Electric, Schenectady, New York.



GENERAL ELECTRIC



Family Helicopters Everybody is discussing helicopters these days. The talk ranges from a determination to fly one to the economic aspects of a plane which possibly will affect our way of living, perhaps putting the suburbs further away from cities, even as did the automobile. Since now the helicopter as the air taxi

of the future, others as a handy machine to have in the back yard. Here is the conception of the Heliback, designed by aviation pioneer W. B. Stout, famed writer who now heads the Stout Research Division of Aviation Corporation's Consolidated Vultee Aircraft. Stout also proposes a roadable plane and an aerocar.

Edison in Aeronautics...

The hundreds of products and developments for aviation that have risen from research at Thomas



A. Edison Industries cannot all be cited. Many cannot be specifically mentioned. But we want you of the Aviation Industry to know that our products are performing in your industry in such a way and in such numbers that we feel you will want to know more about us now and later.

Intricate techniques, highly specialized machinery and personnel long-time trained by Thomas A. Edison in making unique electrical control devices and instruments naturally led the Edison Industries to the manufacture of Edison Aircraft Instruments which have earned top performance records, are used in practically every Army and Navy plane.

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has only about half the weight of earlier types . . . complete absence of hushsprings simplifies maintenance.

Edison Engine Gage Units combine in one case an electrical oil temperature indicator, an oil pressure gage, and a vented fuel pressure gage. Edison glass-sealed switches literally carry their own atmosphere, operate exactly as they did on the ground while up 30,000

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Their leased, one-piece construction makes them absolutely leak-proof. Their in-built mechanical strength assures easy and safe installations . . . rigid standards of accuracy and fast response time assure excellent service. Please do not hesitate to investigate the availability of development facilities here. Let us know your needs—perhaps we have some answers

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Success of Sicilian Campaign Accelerates Glider Program

10,000 by end of '43. U.S. production at all-time high with peak planned for early '44.

The startling success of the American airborne division in the Sicilian invasion will be followed by new orders for probably thousands of additional troop-carrying gliders.

By End of '43—Production of 15-place gliders is already at an all-time peak in the U. S. and is present progress continues, even without new contracts, the nation will attain an annual rate of nearly 10,000 by the end of the year. In one month recently output averaged nearly 100 big gliders a week.

Manufacturing, training, and operational developments with the 15-place Waco CG-4A, used in combat for the first time in Sicily, have been so successful that gliders carrying twice the load are likely to be ready for tests before long.

Reveals bigger gliders—Richard C. du Pont, Special Assistant to Gen. Arnold, freely admits that "there are larger gliders under development . . . We have only just made a beginning."

Only a few eight-place trainers are still being delivered. All others are the Waco C-46, now loaned across the North Atlantic recently, and two others were towed by two planes for a record 1,245-mile non-stop hop late in July.

15 From Building Gliders—About 15 contractors are building complete gliders. Only one, Ford, is also manufacturing planes. Ford's Iron Mountain, Mich., plant is at present the nation's No. 1 glider producer by a wide margin, with Gibson, Pratt-Road, General, Waco, Commonwealth, and Northwestern the remaining major manufacturers. Ford has made numerous changes in construction, and its monthly output is over 100.

More Licenses—Other Waco licenses in production are G & A, Ward, Leichter-Kaufmann, Ridgefield and Tamm. Trainer or experimental builders include Babcock, Beutal, Robertson, and Schweizer.

Piper, Aeronca, and Taylorcraft shared equally an experimental share from the Army for more than two years ago. Light gliders, designed for glider training, but these firms have produced no other gliders since this order ran out early this year.

Program Looked in '41—Three small gliders delivered in December, 1941, to the Army by Frankfort and Lanier-Kaufmann.



How They Did It: To our airborne troops goes a large part of the credit for the successful operations during the opening days of the invasion of Sicily. In this photo, taken in Africa, are some of them in the final unloading stage for those operations, unloading a jeep from a Waco glider.



Glider for Invasion, Need a new refrigerator? This is one of the reasons you can't have one. This Glider Manufacturing Co. introduced at Greenville, Mich., used to be full of refrigerators. But our airborne troops need transportation, and Glider is now making CG-4A Waco gliders, with production steadily on the upgrade.

started the national program. Waco's first CG-4 was delivered in April, 1943, and five months later this model was being built by no other firm. November saw about 100 ships—about half of them small trainers—but December dropped off severely.

Reason for this was the Army's decision to switch completely to the 15-mat glider. This played hob with the AAF's glider pilot training program because only a fraction of (Turns to page 28)

Trail Blazing in the Skies

1933



SKY CABINS FOR WORLD'S FAIR SIGHTSEERS

The cars of the famous Sky Ride at the Chicago Century of Progress 1933-34 were built by Goodyear Aircraft Corporation. While these cars operated on the unusual principle, suspended from overhead cables, the relatively large number of passengers carried made imperative a construction that combined high strength with minimum weight. Calling upon its experience in building America's largest all-metal aircraft structures, Goodyear fabricated these cars from light duralumin alloys. And it is a matter of record that they carried many thousands of passengers without accident.

HOW GOODYEAR AIRCRAFT CORPORATION SERVES THE AIRCRAFT INDUSTRY

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2. By designing parts for all types of airplanes.
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4. By attending our research facilities to aid the solution of any design or engineering problem.
5. By building complete airplanes and engines.

1943



FLIGHT CABINS FOR WORLD WAR BOMBERS

During 1943 Goodyear Aircraft has been producing cabin and flight-deck subassemblies for one of America's largest four-engine bombers. Into these units were incorporated all the skill and exact-working technique Goodyear has amassed in nearly twenty years' practice in handling light alloy metals—a background that includes pioneer development in both heavier and lighter than air. Our nation profits from this today in Goodyear's mass-production of U-bombardier airships and the swiftness of all Navy fighters, the Corsair.

GOODYEAR
AIRCRAFT

the original number of pilots would be needed. Cancellations of contracts for small ships and wheels of helicopters by military authorities to convert gliders to the big models put the youthful glider industry in a panic. Also, the first program had been unrealistic in setting astronomical goals of 5,000 or more gliders a month for the baby industry, most of whose members were small, inexperienced firms. It further dictated that contractors who were also building powered planes must not allow their aircraft work to lag.

Result was that Boeing and Cessna pulled out, although the latter turned out 500 Wecos first. Other firms had difficulties perfecting their small prototypes and those which did perfect them suffered the same fate—cancellation of orders—because the Army didn't want any more eight-place ships.

Great progress in '45—The glider industry was reborn, however, and has made remarkable progress this year. Almost every month has shown an increase in production over the preceding month. Present plans call for the production peak in the first quarter of 1944.

Decisions as to the number of army gliders which will be built and the number of companies which will be brought into the program depends on flight tests of the new Weco. The Army also must decide whether to build up two or three

types of varying size or concentrate on one. MG S. beam German design—Glider veterans du Pont, who has the authority of an assistant chief of air staff or a brigadier general, even though he is a civilian, says, "We've gone ahead of the Germans in glider development . . . We are not only able to retrieve gliders (by pick-up methods) after they have landed, which the Germans are not, but we have also equipped our gliders for blind flying."

The Weco also can carry oxygen apparatus.

Towed at 120 mph—Weas officials say their CG-4A can be towed at 120 mph or glide at 36 mph without stalling. Fully loaded, its weight is about 5,000 pounds, or 15 men fully armed and equipped, two of whom act as pilot and co-pilot. An alternate load is a quarter-ton truck with four men as crew and two men as extra crew, plus extra equipment.

Or, the CG-4A can accommodate a standard 75-mm howitzer with gun crew of three plus glider crew of two, along with ammunition and supplies.

New Interest Lags—Only a few gliders have been built for the Navy, and so far, Navy officials have shown little interest in building up a glider corps.

"The use of gliders (in war) is completely practicable and has tremendous potentialities," du Pont

says. "It suddenly takes aviation away from airports and makes any small field a potential landing or take-off airport."

Headed commercial success agree the glider may be practicable in war, which ignores expense. But they doubt if it will be economically profitable until further wartime experience has been completed.

Brewster-Miranda Dispute Settled

Export representatives of company to receive \$500,000 in commissions

Settlement of a case involving Brewster Export Corp. and Brewster Aeronautical Corp., under which the export firm will receive \$500,000 from the latter, has been approved in New York State Supreme Court. **Wanted Clause**—The \$500,000 represents part of about \$2,500,000 the export company claimed as commission under export contracts. The company wanted claims to \$1,800,000, due eventually on completion of contracted foreign deliveries.

The action was brought by Brewster Aeronautical and a group of minority stockholders against Alfred J. Miranda, Ignacia J. Miranda, J. Wm. Zeller, and Brewster Export.

Commission of \$185,000—The Mirandas, who control the export corporation, were allowed to keep \$185,000 paid in commissions to the Hayes Aircraft Accessories Corp., also controlled by them.

Under the agreement, the export firm contracts as foreign agents for Brewster Aeronautical will be handled, the Mirandas will give up the Brewster name. Commission of \$1,800,000 already received by the export firm, will be returned.

Tread Landing Gear

Wright Field testing new camplair gear enabling planes to land on rough ground or sandy fields.

The new gear is a development by the Firestone, Tire and Rubber Co. whose officials say that the new tread uses about the same amount of rubber that would go into a regulation airplane tire, but that it gives the plane from four to eight times greater contact area on the ground. Many of the "bar hoses" used by our warplanes around the world on the fighting fronts are little more than clearings in the jungle or desert, and landings have been a problem in some areas.

plane talk

ELECTRICAL
DEVELOPMENTS,
IDEAS,
APPLICATIONS FOR THE
AVIATION
INDUSTRY

IN COMBUSTION STORAGE and maintenance, it has been a serious problem to keep dust from filtering into the delicate mechanism. This is now being solved by use of PRECIPITATION—the Westinghouse Electric Air Cleaner. It traps minute air-borne dust particles that filter through mechanical-type air cleaners.

* * * * *

FOR SERVICE PLANES, sleeve bearing and new type antifriction bearing pulleys are now approved. Wider use of these types of pulleys for their particular applications has materially relieved the delivery pressure on aircraft pulleys.

* * * * *

HIGH-FREQUENCY HEATING is finding two increasingly important applications in the aircraft industry: (1) Induction heating for faster, more uniform heat-treating of metal parts. (2) Dielectric heating for speedier and improved fabrication of plywood planes and plastic parts.

For detailed information on Westinghouse equipment for these applications, write for new booklet B-3261.

* * * * *

FOR TESTING OPERATION OF GUN TURRETS, fuel pumps, and other power-driven equipment while on the plane, RECTOX Engine Starters are finding wide use at maintenance depots. Advantage: power is supplied for testing operations without drawing on the plane's battery or generator.

* * * * *

IMPORTANT THERMOSTAT APPLICATIONS for aircraft: (1) Battery heaters are being used in connection with a thermostat, to maintain battery at safe, uniform temperature regardless of ambient temperature. Units can be built directly into the battery—sizes available for any shape or size of battery. (2) Fire Detectors: these thermostats are located at numerous points throughout the plane. Should a fire occur at any point, a signal light is immediately lighted in the cockpit, warning the pilot of danger.

* * * * *

FOR DATA ON WESTINGHOUSE EQUIPMENT for the Aviation Industry, write Dept. T-4 for new booklet B-3255.

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BIG DOORS FOR BIG CARGOES

It won't be long before the airlines will be flying these Douglas C-47 transports for the Air Transport Command, ferrying men and cargo. Or the Army itself may use them to tow gliders and carry equipment to the front. There are about twenty units of the Long Beach plant of Douglas Aircraft Co.

Aircraft Parts from America's New Source of Aluminum

To the aircraft industry, Reynolds means complete service in aluminum. Reynolds mines its own bauxite, processes the ore into finished aluminum and then carries the service through to the final vital operation—fabricated parts for planes.

Reynolds was the first to produce high-grade metal from local domestic ore and was the first aluminum company to fabricate finished airplane parts.

Now Reynolds is mining more bauxite than was mined in the entire country before the war, converting it into hundreds of millions of pounds of aluminum for aircraft. The Park Division in Louisville, expected 40 lines, has thousands of workers and borers of machines on 24-hour schedules. Scrap from fabricating operations leverage 30 percent

steps at Reynolds plants, where it is put right back into production. This eliminates scrap headaches for aircraft manufacturers... saves manpower, plant space, freight facilities... and keeps inventories down!

The foresight and courage that created America's New Source of Aluminum has developed the aircraft industry's new source for finished parts. Reynolds Sales Engineers are available throughout the United States.

REYNOLDS METAL COMPANY • PARTS DIVISION • LOUISVILLE, KY.
AMERICA'S NEW SOURCE OF ALUMINUM

INGOT • SHEET • EXTRUSIONS • WIRE • ROD
BAR • FORGINGS • TIRING • FOIL • POWDER



1 Reynolds Aluminum and finished parts start in this domestic bauxite mine. Reynolds mines more bauxite than was ever mined in the U. S.



2 Reynolds mines bauxite into alumina, refines alumina into aluminum, alumina is cast, rolled and fabricated into sheet and



3 Aluminum scrap, while Alabama plants are fed into small furnaces with alloying metals. Recycling scrap are sent into rollers.



4 Reynolds rolled aluminum alloy being stock, heated and is spread, ready to be forged into aircraft parts.



5 Reynolds large "4-high" hot mill, rolls billets under tremendous pressure into long ribbons of glowing aluminum alloy sheets.



6 First aluminum standing machine in the Aluminum Industry, developed by Reynolds, processing cleanly painted alloy, spray and temper lines to insure precise identification.



7 Reynolds Park Division Shoring Line, supports 4,000,000 lbs. of shored steel monthly. All steel being inspected.
(No Scrap Problems!)

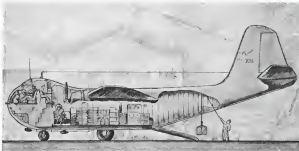


8 Reynolds Tower and Block Division Department, section of the 250,000 sq. ft. expansion of the Park Division in Louisville.
(No Scrap Problems!)



9 Inspection of finished parts—blasted, treated, heat treated, finished, and ultimately painted, ready for aircraft assembly lines.
(No Scrap Problems!)





TAXI CARGO CARRIER

Revolutionary design for a high-efficiency cargo plane which was prepared originally by Defense Supplies Corp. experts to operate in and out of small airports in Central and South America. A plane somewhat sim-

ilar, of all welded stainless steel, will begin testing of the assembly lines of Edwards G. Budd Manufacturing Co. by the end of this year. Gross weight is more than 22,000 pounds.

Big Firms Gain

Douglas, Beech, Sperry, and General report progress.

New gains were reported last week by aircraft and equipment manufacturers.

Douglas Aircraft Co. predicted a doubling of its gross sales on a fiscal year basis. Now delivering \$193,000,000 worth of combat and cargo planes a month, according to R. V. Hunt, vice-president, gross sales for the year ending next Nov. 30 are expected to be more than a billion dollars. The previous fiscal year saw a sales gross of \$650,000,000. Hunt said that less than a third of one percent would reach stockholders, most of the earnings going to taxes.

Lowest U. S. Aircraft—Another doubling was reported by Beech Aircraft Corp., where production in the first half of the 1943 fiscal year was greater than the entire 1942 fiscal year. President Walter H. Beech reported certification of an experimental and developmental program to aid present and postwar output. During April, he said, his company had the least absenteeism of all aircraft manufacturers in the United States.

A new peak in shipments by Sperry Corp. was noted by Thomas A. Morgan, president, at a board meeting where a regular 75-cent

dividend was declared. Morgan, explaining that the directors did not increase the size of the dividend because of working capital requirements, said earnings for the first half of 1943, when the dividend record was set, had not been finally determined. They will, however, be higher than the first half of last year when net income was \$2,344,337, or \$1.19 a share.

Cargo and Troop Gliders—H. J. Maymark, Jr., president of General Aircraft Corp. reported memoranda at a stockholders' meeting that the corporation now is one of the leading cargo and troop-carrying glider manufacturers for the armed forces.

U.S. Forbids Delay in Renegotiation

Woe's points: firms to avoid Congress action; gross loss as methods

Renegotiation agencies of the War and Navy have been warned that they are not to permit contractors to seek to postpone renegotiations in the hope that Congress may amend the Renegotiation Statute.

War & Navy Issue Statute—Joint instructions to that effect were issued by Under Secretary of War Patterson and Under Secretary of Navy Foranville, after they had received reports that "certain con-

tractors are seeking to delay or postpone renegotiation" pending a possible change in the law.

The joint order stated that "whenever a contractor is delaying renegotiation for this reason, the case should be immediately referred to the Under Secretary of War or Navy for final determination of the amount of excessive profits realized or likely to be realized by the contractor under his contracts."

Says Renegotiation Weak—Meanwhile, a fundamental weakness of the present method of renegotiation was described by Robert E. Gross, president of Lockheed Aircraft Corp. as "the contention of the government that it cannot recognize the need for postwar conversion reserves."

"If free enterprise is to discharge its responsibilities in helping to rebuild the world—and it must," Gross declared, "then it must be allowed to build adequate reserves."

His comments were made in connection with a report that the sale of Lockheed and subsidiaries during the first six months of 1943 amounted to \$339,000,000, double the output of Lockheed-Vega during the same period of last year. Gross said the profits shown on the books were "to a degree contrived," since the price of products delivered to the government had not been renegotiated.



JAP CONCENTRATIONS PHOTOGRAPHED —at 400 m.p.h.



Tucked in the belly of the Navy's Corsair is an aerial camera, cradled snugly in a Robinson camera mount. The plane flashes over a Jap base; photographs a ship concentration. Vibration from the mighty Pratt & Whitney 2000 h.p. engine might easily spoil these vital reconnaissance pictures. But the camera is held steadily, and all picture-blurring vibration is absorbed.

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Control Problems Wanted!

IN cooperation with the technical agencies of our armed services and those of the United Nations, as well as many aircraft manufacturers, Minneapolis-Honeywell engineers have developed and are producing a number of important new "Aids to Aviation." The nature of these contributions obviously cannot be revealed for reasons of military security, but M-H Aeronautical Controls and equipment are in daily use in every war theater. Pre-peace planning, however, is another story. When the time comes, Minneapolis-Honeywell will be ready for peacetime aeronautical problems. We therefore invite your future control problems on the basis that we have proved both our engineering and our manufacturing ability and can obviously help you with your future plans... Minneapolis-Honeywell Regulator Co., Aeronautical Division, 2947 Fourth Ave. S., Minneapolis, Minn.



MINNEAPOLIS-HONEYWELL

AERONAUTICAL INSTRUMENTS



TRANSPORT

CAB Examiners Preparing To Handle Flood of Route Cases

Emphasis to be placed on faster schedule rather than changes in procedure; more than 200 applications in.

The Civil Aeronautics Board will rely on increased tempo under its present methods, rather than procedural changes, to begin the jam of cases that confronts it. CAB sources say:

Route Problems—Route cases are the big headache. In addition to proceedings in which some action has been taken, more than 200 applications have been received, and 30 to 40 letters a week ask how new applications should be filed.

The long-range solution must appear in an expansion of the agency staff—there are now 14 civil aviation pentagon—and this already is under consideration. In fact, unofficial conferences with the Budget Bureau have been held and there is little doubt that Congress will be asked, next year at the latest, to provide more money for administration of the Civil Aeronautics Act, with that end in view.

Pace Tough Schedule—The board's executives face a punishing schedule if they are to keep up with their dates this coming fall, winter, and spring. Settlement in this group appears to be that pending cases, aside from those placed in active status by the board, can be handled under present procedure, although expedited where reasonably possible.

Route cases as file cover new services, extension of existing lines, and pickup applications, services for cargo only, and foreign and overseas requests.

Flood Nuts—Some of the hard nuts in this collection already have been set tentatively for hearing. One is a consolidation of two applications for routes from New York to Boston, probably Sept. 8. The controversy over Panagra's sought-after Miami terminal, involving the issue of control of the company, may be presented in New York Sept. 13. Evaluation of the general problem of pickup lines, for which nearly 30 applications have been filed, is scheduled for Sept. 28. The board

also has notified Universal Air Freight Corp. that it will proceed in the near future on its application to become an intermediate carrier of air freight, a matter expected to bring to the fore the whole problem of air common.

Anti-Monopoly Safety Value—In addition to new route cases, in many of which the Department of Justice has intervened as a precautionary anti-monopoly move, the board's executives must handle all rate cases. The toughest of these have been assigned and are being heard as time permits.

CAB examiners don't just stop into the job and start examining. On the contrary, at least six months are required to speculate their legal ability and focus it on their new duties. With men in all lines hard to get, the problem of obtaining candidates for the exacting work re-

quired by board standards may be expected to prove doubly difficult. This task of finding likely prospects will fall to C. Edward Leasure, chief examiner.

One Man Per Case—The heavy prospect ahead of the examiners will mean that what manpower the division has must be utilized sparingly. Thus the practice of having two examiners attend important cases will gradually be abandoned and one man will be assigned to each case. Candidates will be selected when feasible. Pre-hearing conferences, which have speeded proceedings in a number of instances, will continue. But what one examiner has called the "burden of careful consideration" will not be sacrificed.

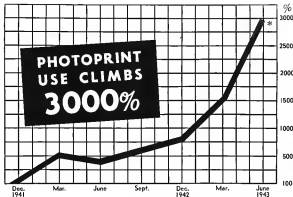
Longer Routes Foreseen—In eight proceedings involving 19 applications, prehearings were held before the order was issued in December, 1944. These will be assigned for hearing in the fall, probably September and October. Late instances may also conference on cases involving extensions to existing routes in the United States and Alaska.

Probably spring will be here before the examiners get to applications for local and pickup services, although by that time the investigation of the federal line situation should be completed.

The assumption is that applications for foreign routes will remain an inactive status until the war is over.



Headaches Coming! With more than 200 new route applications pending, these Civil Aeronautics Board examiners are looking forward to a busy winter season. Left to right, they are Vincent L. Givens, Herndon M. Bell, P. L. Wynn, Chief Examiner C. Edward Leasure, Chief Examiner Francis W. Brown, Ross L. Newman, F. A. Lutz, Jr., Lawrence J. Kotter, M. K. Bryan, and J. Francis Reilly. Not shown are William J. Madden, Albert Beitel, and Heron Fredrick.



FLYING PHOTOPRINTS SPEED AIRCRAFT TOOLING IN THESE LEADING PLANTS

Photoprint departments are in operation at Consolidated, Brewster, Briggs, Douglas (Long Beach), Fleetwings, General Motors, Goodyear, Interstate, Ryan and Vought-Sikorski. New installations are now being made at Douglas' Santa Monica and El Segundo plants, American Aviation, and Willys-Overland.

*Installations not yet completed are not reflected in these figures.

PHOTOPRINT COMPANY



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U. S. Must Plan Post War Disposal Of Military Transports . . . Pogue

Market will be glutted for long period, CAB chairman says, urging orderly disposition of production facilities.

L. Welch Pogue, chairman of the Civil Aeronautics Board, warns of serious consequences unless the nation plans now for the disposition of the vast air transport fleet and production capacity which we will have at the end of the war.

Consequences—Speaking before the Los Angeles Aviation Forum, July 28, Pogue said that if there is no planning, and the surplus aircraft on hand at the end of the war are simply peddled to the highest bidder, we may be reasonably sure of the following consequences:

"1. A vast and costly defense reserve will have been wasted.

"2. The transport aircraft market will be glutted for years to come.

"3. The capacity to manufacture and develop transport aircraft will suffer a blow from which it will take years to recover."

Merits—Pogue noted that the lack of a well worked out plan for coping with the surplus aircraft problem "would doubtless result in the government's following the traditional policy of knocking down all surplus equipment to the highest bidder with the consequent saturation of both domestic and foreign markets."

The CAB chairman rejected the subordinate dumping of these aircraft on the foreign market as unwise. He pointed out that surplus aircraft might be scrapped as an alternative to dumping, and added:

Conly—Liquor—"Of course, some aircraft would need to be preserved to take care of the immediate and pressing needs of the United States and foreign carriers."

Scrapping would have the advantage of clearing up the situation so that the available market would be preserved. It would have the obvious disadvantage of liquidating a very large and costly fleet of transport aircraft which might serve for awhile as a valuable war reserve or an instrument in the achievement of peace for a number of postwar years.

Survey—Pogue suggested that "a careful, on-location survey of all war transport aircraft, in the light of various considerations of cost and value, should be undertaken as a first step in any postwar

surplus air transportation arrangement or plan, in order to determine what equipment is not worth reconditioning or salvaging."

He urged the setting up of adequate machinery now to handle the surplus aircraft problem and suggested that we can anticipate a period of from two to five years before new types are available for the market.

Cross Section—Representatives—Pogue said it was the view of the CAB that the instrument for carrying out along this line the provisions and intent of the Los Bill, now pending in Congress, should be a corporation, the board of directors of which should include representatives of the War, Navy, State, Treasury, and Commerce Departments, and the CAB.

He asserted that any postwar planning which does not provide for aggressive, practical application in the factories of this country just as soon as the war program permits "is a form of self-denial."

Postwar Surpluses—"I have built that, if this problem can be worked out in harmony with the requirements of war production," Pogue said, "our American manufacturers and airline operators need have little concern for the competition from postwar surpluses of war transport aircraft."

Speaking a few days earlier in Denver, Pogue discussed the significance



CAB Chairman L. Welch Pogue, the capable, well-informed chairman of the Civil Aeronautics Board, is on a tour of the west spreading the gospel of aviation and its future.

of air transportation and emphasized that "development in air transportation is not over."

Survey—Yess—"As a million we cannot afford to grow lax here," he added. "It is vital to our people and the world that the power of post-war reconquering the war should not wholly subside. We must continue to depend upon the strong yeast of competition to keep us growing in this vital field."

On July 3, Pogue was scheduled to discuss "Merchandising By Air," before a meeting at Oklahoma City, sponsored by the Oklahoma City Chamber of Commerce and the National Aeronautics Association.

Pogue's western tour called for an address at Tulsa, Okla., sponsored by the Tulsa Chamber of Commerce, Aug. 4, on "Air Service to Small Cities."



ON THE BIG BOARD NOW:

When "NYCA" flanked across the ticker tape of the New York Stock Exchange recently officials of the New York City Board of Trade. President Fred Schuchman (center). The NYCA men are, left to right: Robert Wilson, non-president; Ray Lohnd, treasurer; C. Redell Moore, president, J. H. Carmichael, operations vice-president.

Airlines Policy Committee Expects More Members Soon

United and American Export may join other domestic lines which urge free competition and Private Ownership in post-war international operations.

As the Airlines Committee for United States Air Policy continued discussion last week of plans to further its plans for international operations, there appeared a growing likelihood that United Air Lines would become a signatory to the five-point policy statement.

United Only Holdout—When that statement was issued in mid-July, United was the only holdout among the principal domestic operators Pan-American Airways and American Export Airlines, operating from U.S.A. on an international status, also failed to sign.

Members of the committee, selecting its name after the policy announcement, voiced a "continuing hope" that all non-signers would join.

"We hope all certificated carriers will be members," said Chairman S. J. Solomon, president of Northeast Airlines.

United's Hesitant—When the policy statement was made public, with its 18 signers, United's president, W. A. Patterson, issued an announcement

saying United had declined to go along because of refusal of its request that his line would not be barred from giving serious consideration to jointly financed and operated routes.

As further meetings were held, however, there was indication that United would sign without this condition. Solomon said at the policy press conference that it was his understanding United was not objecting to the statement, but "just was late for additional thought."

To Meet with EDR—Meanwhile the airline heads still expected to discuss their plan with President Roosevelt. An earlier appointment was canceled.

Solomon announced that the committee would open an information office to keep the public informed on progress of the plan.

World-wide Policy—In their policy statement, the lines affirmed their belief in free competition, private ownership, federal encouragement of a sound world-wide re-organization system, world-wide freedom

of transit in powerful flight, and acquisition of civil and commercial outlets.

Members of the Policy Committee besides Solomon are: O. M. Moner, vice-president of American Airlines; Paul H. Brantley, vice-president of Eastern Air Lines; Fred Barker, president of Northwest Airlines; C. Reidel Maers, president of Pennsylvania-Central Airlines; Jack Frye, president of Transcontinental & Western Air.

Safety Bureau Halts Rulings

CAB focuses great changes pending war's end, advises pilots have voice in new rules.

The Safety Bureau of the Civil Aeronautics Board, certain that navigational developments, increase in flying, and difference in equipment will change the air picture after the war, is calling a halt on new regulations.

Pilot Views Asked—Not only does the bureau feel that the many pilots who have grown to war should have a chance to express views before new rules are declared, but attempts are being made to cut the number of proposed regulations.

In studying the future outlook, engineers are being asked of military flyers who will want to go into private or commercial flying after their combat duties are over.

From War to Commerce—Many of these pilots, points out Director James W. Lankford, obtained jobs on big ships—bombers and cargo planes—with the idea of being ready after the war to pilot commercial planes.

"There will be a long period of time, at best," he says, "when hundreds of boys eager to get into big ship flying cannot be accommodated." There is no doubt that these pilots, to get into routes regulated flying, will have to take written examinations on civil air regulations.

Every Man's Air—Another difficulty is expected after the war because of the instantaneous shift in emphasis from wartime "risk flying," where the air belongs to everybody, to more cautious peacetime operations.

The bureau is fearful, too, lest returning pilots accustomed to high-powered planes with extra maneuverability forget themselves in slower commercial craft, and have accidents.

Large Scale Private Flying—Thought is being given to the possibility of postwar private flying.



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Not Giving Up Globe—Yet. Airline officials and representatives study opportunities for international air transportation at a policy announcement press conference. Left to right: Basil Patterson, publicity director, American Airlines; MacDonald Bryan, director of public information, National Airlines; Fred Hunter, president, Northeast Airlines; Paul H. Brantley, vice-president, Eastern Air Lines; J. J. O'Donnell, vice-president, Pennsylvania-Central Airlines; Jack Frye, president, Transcontinental & Western Air; S. J. Solomon, president, Northeast Airlines; and chairman of the Policy Committee, Chilton Hunter, newly appointed attorney for Chicago and Southern Air Lines; Harry R. Stronger, vice-president, All American Aviation.

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Railroad Hits at Justice Dept. Interference in CAB Applications

Kansas City Southern says intervention requested by anti-trust division is without justification or authority.

The Department of Justice petition to intervene in new route proceedings which have been filed with the Civil Aeronautics Board by five surface transportation companies has brought sharp and early response from one of the applicants.

No Jurisdiction—Kansas City Southern Transportation Co., Inc., and Kansas City Southern Railway Co., who filed one of the applications, said in a reply to the department's petition that there is "no justification and no authority" for the proposed intervention, and asked that the petition be denied.

Other applicants in whose case the department acted to intervene are Greyhound Corp., Koshun Air Freight, Pan Atlantic Steamship Co., and Universal Air Freight.

Anti-Trust Laws—Kansas City Southern's reply maintained enforcement of the anti-trust laws was not involved, since no combination was "involved herein, nor contemplated." It contended the depart-

ment has "no justifiable or other interest in this proceeding," and "is not a party designated by law or the rules of the Civil Aeronautics Board as having a right to intervene in proceedings of this character."

Says No Violations—Declaring they could not obtain the authority sought without having proved that public convenience and necessity require the proposed service, the Kansas City Southern maintained that if such a certificate is issued, subsequent exercise of the authority would not violate the anti-trust laws.

"It is obvious," the reply stated, "that, to the extent public convenience and necessity would justify applicants' proposed operation, said federal anti-trust laws give way to the requirements of public convenience and necessity and to the provisions of the Civil Aeronautics Act."

Finally, the reply pointed out that the CAB is the "only governmental

body appointed by law and informed by experience to deal with such matters" and had its own public counsel. "Otherwise informed by experience and conversant with the fundamental principles of transportation economics and law" to contribute to it.

The department had averred that the applications posed a question "whether competition of independent airlines will be so restricted that surface carriers 'can establish a monopoly of air transportation.'"

Rail Men Mum On Monro Charges

Association official admits lobbying complaint is "delicate" subject.

Official silence from the railroads greeted the well publicized Boston speech in which C. Rodell Monroe, president of Transportation-Central Airlines, asserted a rail lobby is running the air transport field.

It was learned, however, that the situation is to be discussed at a meeting of directors of the Association of American Railroads, although there was no indication whether the association would take public cognizance of Monroe's charge.

Toughly Stated—R. V. Fletcher, vice-president in charge of the organization's law department, describing the matter as a "very delicate" one, and he planned to talk it over with the board. He added that he was "not sure the railroads have a definite policy" and ventured that no official comment would be forthcoming at least before the directors' meeting.

Forward Progress—Fletcher heads the association's committee for the Study of Transportation, a group that has devoted most of its attention to postwar problems. L. F. Whittemore, Boston & Maine Railroad, is chairman of a sub-committee on air transportation.

Monroe said he had received no word of comment from the railroads on his speech. A few letters that asked about his "deliberate attack," the PCA president asserted, came from individuals "apparently not connected" with railroads.

Horizontal Monopolies—Monroe told the Aeronautical Association of Boston the "increasing efforts of surface carriers to force their way into the air transport field" is noticeable. "I would not like to state whether the progress through which might be termed 'horizontal monopolies' Associates have urged him to

stress the same theme in a speech Aug. 3 before a Chicago Engineers Club luncheon, where he is to talk on international survey planning, the policy declaration of domestic airlines on world-wide air routes, and his company's proposal for a Southeast route to Europe, which was filed with CAB recently.

Airlines Plan Clearing House

Inter-company transactions of U.S. and Canadian carriers proposed.

A clearing house for inter-airline transactions in North America will be established by the first of next year, under present plans.

Launched at first to operations of Air Transport Association members in the United States, Canada, and Alaska, the new central bureau may become the nucleus for a hemisphere finance system with world-wide applications.

Pending investigation of the plan, studies of the broad problems of foreign exchange have been deferred. Central exchange will be translated into American dollars.

Long Discussed—The central bureau plan has been the subject of annual discussions virtually since the airlines began operations. About six months ago it began to take concrete form.



BEATING CARGO STOWING PROBLEM:

A four-engine Air Transport Command plane is loaded for a secret destination. To points within the Western Hemisphere alone, ATT is now flying more than a million pounds of cargo each week, and if the war continues into 1944, air routes probably will be ten times as long as the combined routes of all the world's greater air lines.

crete form. Its fundamentals have been approved by the Airline Finance and Accounting Conference of the ATA and the association itself.

Expectations are that legal details of incorporation and other preliminaries will be completed, equipment obtained, and the bureau set up for operation before another six months have gone by. Tentative names selected in Airline Clearing House, Inc. Headquarters probably will be in New York City.

Designed as Expedient—Designed to expedite air traffic settlement between the lines on transactions involving passengers, refunds, and excess baggage, the bureau will be established with a view to eventual inclusion of additional services.

Among those would be the selling of governmental agencies for tickets, issued against government transportation receipts, assumption of responsibility for developing promotion scheduling under local and joint passenger tariffs, research useful to analysis of interline ticketing procedures, and development and standardization of uniform tickets and revenue accounting procedures.

How Lines Benefit—Sponsors of the new system say that savings to the lines will accrue through elimination of the long checking process necessary monthly under present methods. Cost to the lines will vary, depending on several factors, of which the number of their transactions is one.

(Continued on page 44)



SOUTH AMERICAN VISITOR:

Joacquin Pedro Solizolo Filho, Brazilian air minister, inspected the model Washington national airport recently with his party and members of the Brazilian Embassy staff. They were guests of William A. M. Burdette, special assistant to the Secretary of Commerce, at a luncheon at the port, and conferred with officials of the Civil Aeronautics Administration and Civil Aeronautics Board. Shown, left to right, are P. A. Richards, chief airport commissioner at the airport, Burdette, Capt. Leo Szwedko, Air Director Filho, and Carlos Martins, Brazilian Ambassador.

Lost, Hungry Pilots Urged to Eat Bugs

Bugs are good to eat and—those whose they're searching for that in need of a very hot shirt on rotten points. Or a landing in the desert may teach you to take insects, snails, and beetles.

These dietary hints come from a new pocket-size manual entitled *Survival*, put out by the Air Lines War Training Institute at Washington. It's 144 pages of common sense for survival crises forced down in any isolated spot and cannot be made good on how to live off the land, build shelter, travel, guard against disease, injury and death.

Make Takeaways, in a foreword, calls the compilation "spendid and comprehensive."

Clever drawings enhance the text, but there is a deadly serious note in the plain words of the text.

"Crabtree never made a map out of anybody," says the brief preface. "A second landing represents

a challenge to your survival."

"If you're not obese (says Burdette) you can nibble away all day long on bugs. They won't hurt you. Some of these taste very good, like ants. Grasshoppers, crickets, and cicadas all provide succulent sustenance."

The white grub that made record in rotten logs are considered quite a treat by old-timers. Just pop them into your mouth. One famous Bureau explorer kept reaching them at the bridge table after he got back to Australia. The girls screamed, but he said that when eating grubs out of his hand.

Termites are also a delicacy. They live in big, cone-shaped houses, sometimes hard as rock. Hack them open, eat both termites and eggs.

The book was written and compiled by Felix Zuckow, formerly medicine editor of Time Magazine.



"Will it be Jobs or Apples, Mr. Kaiser?"



"I hope that you are one of those who'll see to it that none of us will be selling apples on the street when this war is won," the young soldier said to Henry Kaiser.

WHAT BETTER ANSWER than Mr. Kaiser's inspiring words to the graduating class of Washington State College...

"Our tools and machines are wearing out; our substance is being consumed; our transportation system cranks and grinds; our highways are inadequate; our people lack safe and comfortable housing, perhaps by millions of units. There is demand enough on sight to keep every productive force in America working to capacity for 25 years."

May we shake your hand on that, Mr. Kaiser?

The building of the new America is going to be done by courageous, venturesome men. Men who are "well-stocked."

The job is going to be done by lots of men in lots of ways... some great, some strangely small. By the man who paints a concrete ship in three days. By the man who designs a portable radio to fit your hip pocket. By the man who discovers a way to simplify so precious a product as a door lock.

The job is going to be done by men quick to visualize all that these new developments portend... to adapt them to other products and businesses... for more jobs and better living for more people. Men whose vision and enthusiasm will make these necessities for the new.

And where do you find such men?

This two-picture magazine of science and industry, **POPULAR SCIENCE**. Monthly, serves 700,000 of them. Some are presidents. Some are engineers. Some are brilliant scientists. One of them may be Henry J. Kaiser.

Their common denominator is not race, not income, nor any of the conventional paradoxes. It is a state of mind. Whether they're established leaders, or young men on-the-way-out, they have a mental mechanical ingenuity that enables them to see how *new things work*.

They're tomorrow's pioneers... and if you, or your product, or your company plan on having a part in this tomorrow, we recommend you start talking to them today.

**POPULAR
SCIENCE**
A MONTHLY

PACEMAKER FOR POST-WAR

THE NEWS PICTURE MAGAZINE OF SCIENCE AND INDUSTRY

Pacemaker Henry J. Kaiser with a 14-foot model of one of his famous Liberty ships.

1943 Airlines Earnings Will Lag Behind Last Year's Record

By ROGER WILCO

HIGH 1943 in airline earnings for some time to come was probably established during the first half of this year. For the balance of 1943 the domestic air carriers will be hard pressed to maintain their gains. During 1942 the 16 domestic airlines reported aggregate net earnings, after all taxes and charges, of about \$13,293,000. It is highly unlikely that this mark will even be approached this year.

Despite the excellent showing of the first half, earnings are now being tempered by a number of factors.

Current results are now being compared with the upsurge in earnings which got under way in July of 1942. However, the more operating conditions no longer prevail.

Operative for many months now is the sharp reduction in mail compensation ordered by the Civil Aeronautics Board for most of the air carriers. The new rate, established at 5.5 mil per pound-mile—representing a service that will take its toll of the previous level of mail revenues.

Further, effective July 15, the carriers initiated reduced tariffs for their passenger and express business. Operating at capacity, this measure will not attract additional business. Such gains will come when more planes become available.

Moreover, existing contracts with the Army covering mail-related activities have been revised at a less favorable basis to the airlines. These services, in the past, augmented airline earnings, in addition to contributing to profits, certain normal overhead burdens were also absorbed.

To many of these carriers, a certain portion of these "lost" revenues, in any event, would have been paid out in the form of excess profits taxes. Significantly, however, this merely adds stimulus to the industry's fight for airline earnings as expressed by excess profits taxes.

In looking at 1942 results, it will be found that reported profits were substantially bolstered by the gains

resulting from the sale of planes and other equipment. This year, airline earnings will be almost completely devoid of such "other income."

As transport equities, partly as a result of the excellent earnings of the immediate past, have receded the best gains of any industrial group in the securities market. For example, as compiled by the Securities and Exchange Commission, the index of airline stocks has risen more than 22 percent from the start of the year to mid-June, 1943. The market has only advanced 23 percent during the entire period.

For a longer range view it is startling to observe that since January, 1939, to June of this year the air transport index has gained more than 142 percent—by far the greatest rise of any one industrial group.

This strong upward trend has been sustained by far more potent forces than good earnings.

Identified as a growing industry, the airline group has far more popular acceptance, and earnings have a tendency to be capitalized more liberally by the investing public. This becomes particularly true with the market inclined to view the end of the war in sight and thus favoring those issues with a peace thrust. By contrast, the aircraft issues as war stocks have been decidedly weak.

There have been increasing indications, however, that air transport equities may have overreached themselves. Market values for many of the lines are from two to three times the company's net worth or actual investment. For example, at April 30, 1943, the net worth of Pan-Central Airlines aggregated about \$2,830,000. Yet, based at recent highs, the market evaluated the company at more than \$5,500,000. These spreads certainly are without import—providing the trend of strong power can support the market value. PCA earned \$488,655 during 1942. Of this amount, \$268,735 in net income before taxes was contributed by profits on the sale of equipment. In effect, 56 percent of

the carrier's earnings came from non-operating sources. In other words, the "normal" earning power of the company is being capitalized at more than 50 times last year's results—a liberal measure.

A number of astute market observers have expressed the belief that airline equities are now consolidating their gains and may have difficulty in entering new high ground. The market action supports this view as prices have declined in relation to the rest of the market.

Ask Stock Retirement

Bahs S. Dumes, on the eve of his resignation as president of Republic Aviation Corp., advised retirement of that firm's outstanding second preferred stock at \$10 a share if it could be arranged. The same issue retired 25 percent of the issue at an earlier date.

His letter to stockholders, in which he resigned to return to American Airlines as vice-president and general manager, said Republic's pension plan had increased nearly 100 times since May 1, 1941. Dumes reported floor space and orders backlog had increased 10 times and personnel expanded eight times during his time in office.

The letter disclosed that Dumes is keeping his common share holdings in Republic.

Braniff Plan

Braniff Airways stockholders will vote July 18 on a measure to redeem from 458,000 to 1,500,000 shares. T. E. Braniff, president, said the company may use part of any newly authorized shares as a dividend.

Budd Dividend

The first preferred dividend paid by Edward G. Budd Manufacturing Co. of Philadelphia since November 1938 has been declared by Budd directors as the company's new 45 preferred shares. Over a period of two months, the dividend is payable Sept. 1 to holders of record Aug. 25 on shares outstanding on that date. The company has reported for the quarter ended June 30 a net profit of \$590,558 after federal taxes of \$2,196,086. For the comparative 1942 period, net profits were \$993,468, and income and excess profits taxes \$5,863,456. For the first six months of 1943, after \$4,588,000 for taxes, the net was \$1,189,496. Net worth \$1,823,819 and taxes were \$7,213,706 for the first half of 1942.



Pound Saved in Plane Is Worth \$2,000

The light metal wing section industry is making possible application of the human about a plane saved, and has one more pound to add to the total.

A pound reduction in weight is a plane like the DC-3 increase in payload during its operating life approximately by 10,000. This means in flying about 100,000 tons in 24 miles, of the three parts by G. E. Miller, of the SAE National Aeronautics meeting in New York Thursday.

Mr. Miller, in his speech repeated the above new item, pointed out the value of weight reduction in commercial plane. "When military aircraft is mentioned," said Mr. Miller, "the result you get is more money saving."

BOOTS AIRCRAFT NUTS, fabricated from steel and having all the tensile strength of steel bolts, weigh approximately half their conventional nuts in many instances. They have only 1/2 the weight in actual use. They come up in 45 points per airplane.

LIGHTNESS Keeps 'Em Firing Longer

Thanks to the lightweight of Boots all-metal, self-locking nuts, which protect a Flying Fortress, it can carry 200 extra pounds of .50 caliber bullets. This extra ammunition weighs about sixty pounds—the weight saved by using Boots Nuts, in place of other nuts, on a heavy bomber.

Boots Nuts are not only lighter than other nuts—they're tougher, too. No amount of plane vibration can loosen them. They withstand the convective action of chemicals, salt water and weather. And they can be re-used again and again. They literally "outlast the plane."

Boots all-metal, self-locking nuts, used on every type of U.S. aircraft, meet the specification of all government agencies.

"They Rely With Their Boots On—Lighter"

BOOTS

Self Locking Nuts For Application in All Industries

Mail Priority Is Not the Answer

THE WORLD'S FASTEST AIR MAIL SYSTEM is bogging down into hopeless confusion. The volume of mail being delivered at airports or being carried off to trains every day is enormous. Week by week the jibs piles up. The problem is rapidly reaching the shoredown stage.

Not so long ago one of the Army's reasons for failure to release more transports to the airlines was the contention that much of the mail was inconsequential. That charge is no longer valid, if, indeed, it ever was. Responsible officials in Washington now report that more than 25 percent of all air mail postage today is war mail. Practically all air express is directly or indirectly war material.

High postal officials have taken the matter up with the Secretary of War and serious consideration now is being given by the Army to a priority system for air mail.

At first glance this sounds fair enough. Mail is now the only part of the airlines' traffic which has no preferential treatment, and if it were not for the voluntary policy of airlines to favor mail over non-priority passengers a lot of air mail would never get off at all. But would priorities solve the problem?

The joker in the theory that it would is that not even all of the priority passengers and priority express are getting on the planes. The two classes of traffic are already in daily conflict.

Both the passenger and express priorities systems have some serious faults.

No one denies that the Army, Navy, and other Government and industry officials hold first call on seats. But reliable reports stream in from all over the country that priority passengers are occupying space on nonessential and even trivial missions.

This means that many passengers traveling directly or indirectly for the war effort are unable to obtain priorities. It also means that every undeserving passenger can keep 300 lb. of mail, or 8,000 letters, from going aboard a flight.

The express priorities system is even more difficult to handle because it involves thousands of pieces of varying size pouring into airline cities by train, truck, and bus from neighboring points.

Another breakdown resulted from the fact that scores of towns organizing express have not had priority offices, and consequently shipments of war materials from such points were never granted any preference rating whatever.

As in the case of passengers, important consignments with high ratings are dumped once or even twice in a

transcontinental trip in favor of priority passengers or other priority traffic. Express delays of one to three days for this reason are everyday realities. Much express, even under priority, never gets back as a plane once it is loaded.

How then can mail priority offer an adequate solution if all of the high priority traffic we have now can't be handled? Like the old Washington moderns' contention that plagued WPA last year, we shall reach the point, and quickly, where all priority is no priority, and today's problem will still be with us.

Neither the Post Office nor the airline industry has any thought of impeding the war effort, but the nation's business has been built up on the air mail system and any further disruption of service is bound to have a serious effect on war industry.

WE HAVE REACHED the point where we must weigh carefully the value to the war effort of maintaining rapid air transportation of mail, express, and passengers against the effect of the military services giving up a few more planes to the airlines.

The Army contends—mainly the Air Transport Command up to now—that it needs every one of the scores of military transports being produced every month and needs them more than the sorely-priveted airlines.

To those who know the facts that it is difficult to understand. Aviation men can see for themselves how many military transports are sitting in hangars or on airport aprons day after day. They see the Army and Navy duplicating cargo services which the lines could have furnished with fewer men and planes. They are even more puzzled by the encouragement given a British mission which is reported in this country on a search for additional transports.

Meanwhile, the Army, having taken half of the airlines last year, has not returned more than one of them. Yet air mail postage alone is up 15 percent. Express is skyrocketing even higher.

There is only one answer to the problem of adequate mail, express, and passenger service, and that is more planes now, not six months from now after the entire priorities system has collapsed in red tape and endless traffic delays.

The Army can save the nation's air mail system and spur the war effort, but mail priorities is not the answer and never will be.

ROBERT H. WOOD

DIAGNOSTICIANS OF DESIGN ..are working together to make good planes better



One of the most significant aspects of the contribution of the aircraft industry to our country's war effort, has been the exchange and utilization of specialized abilities on a cooperative, intra-industry basis. At McDonnell, we have been privileged to work with the Army and Navy, and with a number of aircraft manufacturers on assignments involving specialized research.

Detailed information concerning the results achieved by our engineers, in military research, continued. We can, however, mention a few among many projects brought to successful completion.

Among these were: an aerodynamic research assignment on a well-known combat plane which has seen action in many engagements; a flutter research assignment on a giant plane being built by one of America's largest aircraft manufacturers; the development of strong, lightweight plastic composites for use in the construction of new aircraft parts to permit the use of weight-saving plastics.

We are prepared to carry out further research assignments—with particular reference to plastic research, and the development and use of plastics in many phases of aircraft design and manufacture. We shall welcome inquiries.

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Manufacturers of PLANES • PARTS • PLASTICS • SAINT LOUIS • MEMPHIS •

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35,000'

40,000'

25,000'

**Republic P-47 Thunderbolts
Cut Bomber Losses
Over Europe**

American high-altitude bombers are now being protected en route over Europe by the U. S. Army's fastest and heaviest-gunned single seat fighter... Republic P-47 Thunderbolt.

On their initial assignment, Thunderbolts returned from a raid over Belgium without a loss... more important, not one bomber was missing.

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THE P-47 Thunderbolt was built to do one job and do it supremely well... to fight in the stratosphere.

It escorts bombers... guards them from above... though they fly at 35,000 feet or more.

The P-47 Thunderbolt has everything it needs to do this job... speed over 400 m.p.h.... heavy fire-power... turbo-supercharger... 2,000 horsepower engine... pilot protection... other items too restricted to talk about.

Reports from the fighting-fronts indicate that the Thunderbolt is doing... superbly... just what its designers, Republic engineers and the U. S. Army Air Forces, intended it to do.

It is helping America win supremacy in the stratosphere... the critical battlefield of today's war... the sky-road of tomorrow.

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REPUBLIC P-47 THUNDERBOLT